

of finally-rejected claims. *See* M.P.E.P. § 714.13. Thus, Applicant respectfully requests entry of the proposed amendments to the claims.

Specification

Applicant thanks the Office for removing the objection to the specification in light of the Amendment and Request for Reconsideration filed on October 15, 2001.

Double Patenting

Applicant thanks the Office for removing the advisory concerning double patenting in light of the Amendment and Request for Reconsideration filed on October 15, 2001.

Claim Objections

Applicant thanks the Office for removing the objection to claim 4 in light of the Amendment and Request for Reconsideration filed on October 15, 2001.

Rejection – 35 U.S.C. § 112 ¶ 2

The Office has maintained the rejection of claims 5 and 7 under 35 U.S.C. § 112 ¶ 2 as being indefinite as to what is a “light” and “heavy” metal since there is no official standard defining these terms. Applicant respectfully disagrees with this rejection.

A fundamental principle contained in 35 U.S.C. § 112 ¶ 2 is that the applicant can be his own lexicographer. He can define in the claims what he regards as his invention essentially in whatever terms, provided those terms are not used in ways that are contrary to the accepted meaning in the art. *See* M.P.E.P. § 2173.01. The definiteness of claim language must be analyzed not in a vacuum, but in light of the specification. *See* M.P.E.P. § 2173.02.

In light of these requirements, the Office has not shown that the terminology in claims 5 and 7 does not meet these requirements. Claim 5 (and 7) recite that the metal-containing materials can be a light (or heavy) metal or alloy thereof. The paragraph bridging pages 6 and 7 of the specification describes specific examples of both light and heavy metals.

Despite these arguments, the Office contends that “light” and “heavy” metal are indefinite, as the atomic mass of the metal does not appear to be the difference between the light and a heavy metal in the specification of the present application. However, the atomic mass is not the only standard available by which to determine what is a light metal and what is a heavy metal. In light of the examples for each type of metal provided in the specification, applicant maintains that the skilled artisan would have understood for certain that the exemplified metals in the specification were, respectively, light or heavy metals. As well, given the types and numbers of metals disclosed as light and heavy metals, the skilled artisan would also understand the other types of metals that would be light and heavy metals.

Nevertheless, in an effort to expedite prosecution, claims 5 and 7 (and their respective dependent claims 6 and 8) have been amended as suggested by the Office. Thus, applicant respectfully requests withdrawal of this rejection.

Rejection – 35 U.S.C. § 102(e) over Logan

The Office has rejected claims 34-36 under 35 U.S.C. § 102 (e) as being anticipated by Logan (U.S. Patent No. 6,227,252), for the reasons listed on pages 4-5 and 11-13 of the Office Action. Applicant thanks the Office for indicating that the rejection of claims 1-4, 7, 9-10, and 16-20 has been overcome.

Applicant respectfully traverses this rejection. The Office recognizes that Logan does not disclose the claimed process steps, but argues that it is not clear how a roll wrapped metal layer is

patentably distinguishable from a metal layer that is applied by splitting a pipe and rejoining since both process result in a layer having a seam. The Office notes that roll wrapping can form seamed butt joints, citing page 23, lines 3-8 of the present application.

Such butt joints are not formed, however, when the inner or outer layer is formed using a continuous metal containing sheet. See lines 7-8 of page 23. Claims 34-36 have been amended to recite that the at least one inner and outer layers are made from a continuous sheet of a metal-containing material. Thus, the product of the presently claimed method differs from the product made by the method disclosed by Logan.

Thus, the Office has not substantiated that Logan anticipates present claims 34-36. Accordingly, applicant requests withdrawal of this ground of rejection.

Rejection – 35 U.S.C. § 102(b) over Wilkinson

The Office has rejected claims 34-36 under 35 U.S.C. § 102 (b) as being anticipated by Wilkinson (U.S. Patent No. 4,161,231), for the reasons listed on pages 5 and 13-14 of the Office Action. Applicant thanks the Office for indicating that the rejection of claims 1-4 and 16-20 has been overcome.

Applicant respectfully traverses this rejection. The Office recognizes that Wilkinson does not disclose the claimed process steps, but argues that it is not clear how a roll wrapped metal layer is patentably distinguishable from a skin having numerous pieces. The Office notes that there is no limitation in claims 34-36 that requires that the outer layer must be a single piece of material and is not a layer formed from separate plates.

Claims 34-36 have been amended to recite that the at least one inner and outer layers are made from a continuous sheet of a metal-containing material. Thus, the product of the presently claimed method differs from the product made by the method disclosed by Wilkinson.

Thus, the Office has not substantiated that Wilkinson anticipates present claims 34-36. Accordingly, applicant requests withdrawal of this ground of rejection.

Rejection – 35 U.S.C. § 102(a) over Ohrn

The Office has rejected claim 14 under 35 U.S.C. § 102 (a) as being anticipated by Ohrn (U.S. Patent No. 6,116,290), for the reasons listed on pages 6 and 14 of the Office Action. Applicant respectfully traverses this rejection.

Applicant maintains that claim 14 is allowable for the reasons discussed in the previous Amendment filed on October 15, 2001. In effort to expedite prosecution, however, Applicant has canceled claim 14. Thus, this rejection is moot as claim 14 is no longer pending. Accordingly, applicant requests withdrawal of this ground of rejection.

Rejection – 35 U.S.C. § 102(b) over Mann

The Office has rejected claims 34-35 under 35 U.S.C. § 102 (e) as being anticipated by Mann (U.S. Patent No. 3,332,446), for the reasons listed on pages 5 and 15-16 of the Office Action. Applicant thanks the Office for indicating that the rejection of claims 1-9 and 11 has been overcome.

Applicant respectfully traverses this rejection. The Office recognizes that Mann does not disclose the claimed process steps, but argues that it is not clear how a roll wrapped metal layer is patentably distinguishable from a metal layer that is applied with a forming die and welded in a

butt joint along the seam since both process result in a layer having a seam. The Office notes that roll wrapping can form seamed butt joints, citing page 23, lines 3-8 of the present application.

Such butt joints are not formed, however, when the inner or outer layer is formed using a continuous metal sheet. See lines 7-8 of page 23. Claims 34-35 have been amended to recite that the at least one inner and outer layers are made from a continuous sheet of a metal-containing material. Thus, the product of the presently claimed method differs from the product made by the method disclosed by Mann.

Thus, the Office has not substantiated that Mann anticipates present claims 34-35. Accordingly, applicant requests withdrawal of this ground of rejection.

Rejection – 35 U.S.C. § 102(b) over Frease

The Office has rejected claims 1-3 and 34-35 under 35 U.S.C. § 102 (b) as being anticipated by Frease (U.S. Patent No. 1,677,714), for the reasons listed on pages 6 and 16-17 of the Office Action. Applicant respectfully traverses this rejection.

Independent claim 1 currently recites a structural member comprising a continuous plurality of contoured inner layers and a continuous plurality of contoured outer layers. Claims 34-35 currently recite a structural member made by a process comprising roll wrapping at least one inner layer comprising a continuous sheet over a substrate, roll wrapping at least one intermediate layer over the at least one inner layer, and roll wrapping at least one outer layer comprising a continuous over the at least one intermediate layer. Proposed independent claim 41 currently recites a structural member comprising a plurality of solid contoured inner layers and a plurality of solid contoured outer layers.

As to claims 1-3, the Office argues that Frease discloses multiple intermediate layers between the intermediate layer 16 and the outer and inner walls of Frease's tubular structure and therefore claims 1- 3 are anticipated by Frease. The Office, however, has not substantiated that Frease teaches the limitations currently recited in claims 1-3 or 41. Indeed, it would be difficult for the Office to show that Frease discloses such limitations in light of the fact that Figures 1-5 illustrate the "multiple intermediate layers" are neither part of a continuous sheet nor are solid like the inner and outer layers described and claimed in the present application.

As to claims 34-35, the Office recognizes that Frease does not disclose the claimed process steps, but argues that it is not clear how a roll wrapped metal layer is patentably distinguishable from a layer made by the process of Frease since both processes result in a layered tubular structure. The Office notes that there is no limitation in claims 34-35 that requires that the inner or outer layer must be a single piece of material and is not a layer formed from separate plates.

Claims 34-35 have been amended as detailed above to recite that the at least one inner and outer layers are made from a continuous sheet of a metal-containing material. Thus, the product of the presently claimed method differs from the product made by the method disclosed by Frease.

For the above reasons, the Office has not substantiated that Frease anticipates claims 1-3 and 34-35. Accordingly, applicant requests withdrawal of this ground of rejection.

Rejection – 35 U.S.C. § 103 over Logan

The Office has rejected claims 12-15 and 39-40 under 35 U.S.C. § 103(a) as being unpatentable over Logan for the reasons listed on page 7 and 17 of the Office Action. Applicant respectfully traverses this rejection.

The Office previously recognized that Logan only discloses grade X65 steel, but argues that it would have been obvious to use any conventional materials in place of the steel. The Office took Official Notice that light metals, composite materials, and stainless steels are conventionally used in piping and, therefore, using them in Logan's structural configuration would have been obvious. Applicant respectfully disagreed with the Office's rationale, arguing that Logan discloses that only specific piping materials could be used in his invention. Accordingly, applicant argued that even if the Office's Official Notice is correct (a fact which Applicant did not concede), it does not establish that composite materials could be used in place of the API Grade X65 steel pipe described by Logan.

In the final Office action, the Office contends that submerged pipeline construction is only Logan's preferred end use (citing column 2, lines 7-12) and the skilled artisan would have understood that Logan's invention would be useful in any pipeline environment that requires lightweight and resistance to pressure differentials. Applicant respectfully disagrees with Office.

In essence, the Office continues to argue—via Official Notice (which applicant has disagreed with on the record)—that light metals, composite materials, and stainless steels are conventionally used in piping and, therefore, using them in Logan's structural configuration would have been obvious. What the Office is required to substantiate is *why* this is obvious, e.g., for what reason would the skilled artisan would have modified Logan and used a material other than the disclosed stainless steel material.

The Office, however, has failed to make such a showing. The Office has not substantiated that there is any motivation or suggestion for using materials other than stainless steel in the device of Logan. The Office has merely asserted that other materials are “conventionally used” in pipeline construction. But such an assertion of conventional use is no more than contending that the device of Logan is capable of being modified to replace stainless steel with composite materials without showing *why*, e.g., showing the motivation or suggestion for such a replacement. And although the device of Logan “may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation” to do so. *See* M.P.E.P. § 2143.01 *citing In re Mills*, 916 F.2d 680, 682, 16 USPQ2d 1430, 1432 (Fed. Cir. 1990); *see also In re Fritch*, 972 F.2d 1260, 23 USPQ2d 1780 (Fed Cir. 1992). Such motivation or suggestion, by definition, must be more than an allegation that a replacement material can be used.

For the above reasons, the Office has not substantiated that the skilled artisan would have considered claims 12-15 and 39-40 obvious in light of Logan. Accordingly, applicant requests withdrawal of this rejection.

Rejection – 35 U.S.C. § 103 over Frease

The Office has rejected claims 12-15, 21, and 31-40 under 35 U.S.C. § 103 (a) as being unpatentable over Frease (U.S. Patent No. 1,677,714), for the reasons listed on pages 8-9 and 17-18 of the Office Action. Applicant respectfully traverses this rejection.

The Office previously recognized that Frease did not disclose the claimed materials, but argued that it would have been obvious to replace the metal of Frease with a composite material because both composite materials and stainless steels are used in piping. The Office took



Official Notice that light metals, composite materials, and stainless steels are conventionally used in piping and, therefore, using them in Frease's structural configuration would have been obvious. Applicant respectfully disagreed with the Office's rationale, arguing that Frease discloses that only specific piping materials could be used in his invention because of the manner in which Frease manufactured his structural member. Accordingly, applicant argued that even if the Office's Official Notice is correct (a fact which applicant did not concede on the record), it did not establish that composite materials could be used in place of the stainless steel described by Frease.

In the final Office action, the Office notes that many composite materials can be formed in the same manner as metal sheet is formed (the method described by Frease) and therefore the skilled artisan would "not be adverse" to using modern composite materials in the process of Frease. Applicant respectfully disagrees with Office.

In essence, the Office continues to argue—via Official Notice (which applicant on the record has disagreed with)—that composite materials and stainless steels can both be used in piping and, therefore, using them in Frease's structural configuration would have been obvious. As well, the Office newly argues that many composite materials can be formed by sheet metal channel forming (Frease's process) and the skilled artisan therefore would not be averse to using such composite materials.

To begin, the Office has merely alleged that composite materials can be formed by sheet metal channel forming. The Office has not supported such an allegation with factual evidence, e.g., prior art disclosure. Moreover, even if the Office supported this allegation, the Office is still required to substantiate is *why* this is obvious, e.g., for what reason would the skilled artisan have modified Frease and used a material other than the disclosed stainless steel material.

The Office, however, has failed to make such a showing. The Office has not substantiated that there is any motivation or suggestion for using materials other than stainless steel in the device of Frease. The Office has merely asserted that other materials (like composite material) can be used in piping. But such an assertion is no more than contending that the device of Logan is capable of being modified without showing *why*, e.g., showing the motivation or suggestion for the skilled artisan using composite materials in place of the disclosed material. And although the device of Frease “may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation” to do so. *See* M.P.E.P. § 2143.01 *citing In re Mills*, 916 F.2d 680, 682, 16 USPQ2d 1430, 1432 (Fed. Cir. 1990); *see also In re Fritch*, 972 F.2d 1260, 23 USPQ2d 1780 (Fed Cir. 1992). Such motivation or suggestion, by definition, must be more than the Office’s allegation that the skilled artisan “would not be adverse” to making the proposed modification.

For the above reasons, the Office has not substantiated that the skilled artisan would have considered claims 12-15, 21, and 39-40 obvious in light of Frease. Accordingly, applicant requests withdrawal of this rejection.

Rejection – 35 U.S.C. § 103 over Cappa

The Office has rejected claims 12-15, 21, and 31-40 under 35 U.S.C. § 103 as being unpatentable over Cappa (U.S. Patent No. 5,848,767) for the reasons listed on pages 9-10 and 18 of the Office Action. Applicant respectfully traverses this rejection.

The Office previously recognized that Cappa differs from the claims in using a metal honeycomb core with composite inner and outer layers while the claims generally require that at least one (or both) of the inner and outer layers is formed of a metal-containing material. The

Office argued that it would have been obvious to have used a metal-containing material in place of the composite material because Cappa discloses in the Background section that manufacturers have been substituting composite materials for parts of aluminum structural elements to decrease weight and meet other spacecraft requirements. The Office took Official Notice that using metal for the face sheets in structural honeycomb articles is conventional in the art.

Applicant argued that in light of the background section of Cappa, manufacturers are moving toward substituting composite materials for aluminum in the inner and outer face sheets of spacecraft frames, e.g., the opposite of the Office's proposed modification. Thus, Cappa *teaches away* from the Office's proposed modification. In response to these arguments, the Office contends that the very fact that manufacturers have been substituting composite materials for aluminum is an admission that the alternate use of aluminum (although not as desirable from a weight standpoint) is considered an obvious variation.

Once again, applicant respectfully disagrees with the Office. The Office's proposed modification would replace the composite material of Cappa with aluminum. The result of this modification would make Cappa's structural member heavier, as recognized by the Office. But making Cappa's structural member heavier is undesirable. The structural member of Cappa is used as a spacecraft frame and manufacturers of spacecraft frames seek to minimize the weight of the frame so that a large portion of the spacecraft weight can be apportioned to the payload. *See* column 1, lines 37-39. In using composite materials instead of aluminum, Cappa discloses that an advantage of his spacecraft frame is a lighter weight. *See* column 2, lines 13-16.

Thus, the Office's proposed modification would be make Cappa's spacecraft frame heavier, an undesirable result in light of Cappa's express purpose of making the spacecraft frame lighter. And where a proposed modification would render the prior art unsatisfactory for its

intended purpose, there is no suggestion or motivation to make the proposed modification. *See* M.P.E.P. § 2143.01 *citing In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). Thus, the Office has again not provided sufficient motivation or suggestion for the proposed modification.

For the above reasons, the Office has not substantiated that the skilled artisan would have considered claims 12-15, 21, and 31-40 obvious in light of Cappa. Accordingly, applicant requests withdrawal of this ground of rejection.

#### Allowable Subject Matter


Applicant thanks the Office for indicating that claims 4 and 22-30 would be allowable if rewritten in independent form. Accordingly, applicant has amended claims 4 and 22-23 to make them independent claims by including limitations from their respective base claims.

#### CONCLUSION

For the above reasons, as well as those of record, applicant respectfully requests the Office to withdraw the pending grounds of rejection and allow the pending claims.

If there is any fee due in connection with the filing of this Amendment, including a fee for any extension of time not accounted for above, please charge the fee to our Deposit Account No. 18-0013.

Respectfully Submitted,

By   
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